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Egypt: Nuclear Program and the Non-Proliferation Treaty

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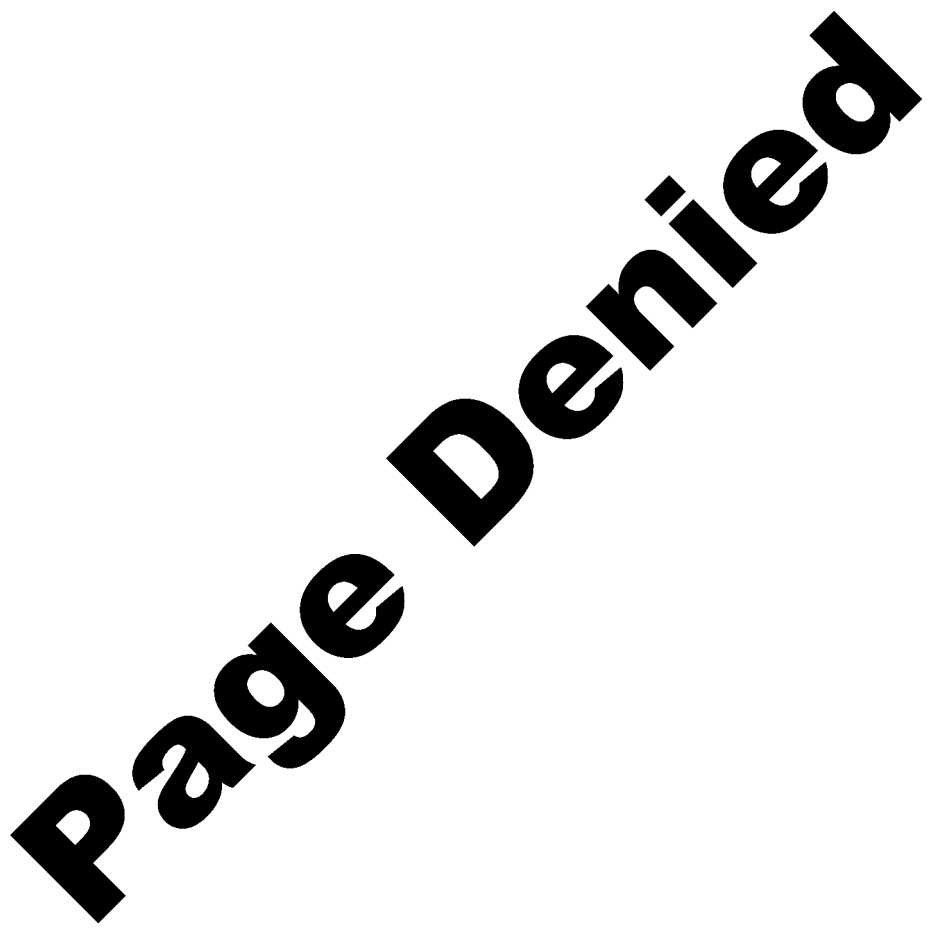

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Egypt: Nuclear Program and the Non-Proliferation Treaty

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Summary

On 26 February 1981 Egypt ratified the nuclear Non-Proliferation Treaty. Its new status as a party to the treaty will facilitate the acquisition of considerable nuclear technology and facilities. Egypt has long been interested in developing a nuclear energy program, and its ratification of the treaty probably was motivated by this desire. Although Egypt has become increasingly concerned about the growing nuclear weapons development activity in the Middle East, we do not believe that it has a program to develop nuclear weapons or could develop them before the 1990s. Nevertheless, Egypt probably believes that an expanded nuclear power program eventually will give it the technical capability to develop nuclear weapons and that such a capability would provide leverage in future dealings with Israel, Iraq, and Libya.

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Egypt currently has only a small Soviet-built research reactor but has plans for an ambitious nuclear power program that could have eight nuclear power reactors by the end of this century. Egypt also is interested in acquiring facilities that will allow them to conduct research on some aspects of the nuclear fuel cycle. This research would help them develop a technical base to support an eventual weapons option.

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Egypt has a good resource base to support its planned nuclear power program. It has a large cadre of nuclear scientists, recently discovered uranium sources, and an economy that can support such a program.

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This memorandum was prepared by [redacted] *Office of Scientific and Weapons Research, and* [redacted] *Office of Political Analysis. It has been coordinated with the Offices of Strategic Research and Economic Research, the Special Assistant for Nuclear Proliferation Intelligence, and the National Intelligence Officer for Near East–South Asia. Information available as of 1 September 1981 was used in its preparation. Comments and queries are welcome and may be addressed to the Chief, Nuclear Proliferation Branch, OSWR,* [redacted]

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Introduction

Egypt has long sought to gain UN endorsement of a nuclear weapons free zone in the Middle East and was one of the original signatories of the Non-Proliferation Treaty (NPT) in 1968. However, until 26 February 1981 Egypt had refused to ratify the NPT unless Israel did so.

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Motivations for Ratification

Egypt's decision to ratify the NPT and its subsequent efforts to negotiate the purchase of nuclear reactors from the United States, France, and other countries reflect President Sadat's concern for both the energy future of his country and growing nuclear activity in other Middle Eastern countries. The Egyptian decisionmakers probably believe that by ratifying the NPT and embarking on a major nuclear development program, they can solve their domestic energy problems and provide leverage in future dealings with Israel, Iraq, and Libya.

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Limited Energy Resources

Egypt has long been interested in developing nuclear energy and sought to purchase nuclear power plants from the United States during President Nixon's trip to the Middle East in 1974. Cairo's unwillingness to ratify the NPT, however, blocked its efforts to acquire such power plants, despite the fact that Egypt was among the original signatories of the treaty in 1968.

The Egyptians are aware that they cannot rely on their oil resources to meet the projected 21st century demands of their rapidly growing population—43 million in June 1981 and increasing by 100,000 a month. Thus, they plan to build eight nuclear power plants over the next 20 years. Sites being studied for the future power plants are along the Mediterranean Sea west of Alexandria and along the Gulf of Suez southeast of Cairo.

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The decision by Egypt to act now to expand energy resources through a nuclear power program reflects its realization of the country's energy needs and also the upturn in the Egyptian economy over the past several years. Real gross national product has risen 7 to 9 percent a year since 1974, and the balance of payments in 1980 was stronger than in any year since the Arab-Israeli war in 1973. Egypt thus feels better prepared now than before to purchase nuclear plants and believes it needs to initiate a nuclear power program now if it is going to accomplish its goal of having eight reactors operating by the year 2000.

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Political Factors.

For the past 12 years, Egypt had refused to ratify the NPT until Israel did so. Sadat and other Egyptian decisionmakers have believed for several years that Israel had nuclear weapons. Egyptian officials are also well aware of Libyan and Iraqi efforts to develop their nuclear programs.

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Sadat probably believed that ratifying the NPT would in turn put more pressure on Israel to do the same.

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An expanded nuclear program also gives Sadat more options in the future for dealing with Libya and Iraq. Shortly after ratifying the NPT, the semiofficial Egyptian newspaper *AL-Aharm* noted in a major editorial that ratification "will strengthen Egypt's nuclear option in the future" and argued that both Libya and Iraq gained access to nuclear technology only after they ratified the NPT.

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Sadat also may calculate that ratification will enhance his ties with the new US administration and set the stage for closer US-Egyptian cooperation on nuclear matters. In the past Egypt has been unhappy with US hesitance to provide nuclear aid without Egyptian action on the NPT

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There is no evidence to suggest that Egypt is preparing to develop nuclear weapons. Sadat knows such a move would jeopardize his ties to the United States. Nevertheless, the acquisition of sophisticated technology and experience in the nuclear energy field could provide Egypt with the technical base to develop a weapons capability if a political decision is made to do so. Egypt probably would make such a decision if Israel, Iraq, or Libya tested a nuclear weapon

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Nuclear Facilities

The only nuclear facility in Egypt is the Inchas Nuclear Research Center near Cairo. The center contains a Soviet-supplied research reactor and several laboratories. The 2-megawatt thermal (MWt) reactor began operating in 1961 without international safeguards, but the recent ratification of the NPT will require the reactor to be put under International Atomic Energy Agency (IAEA) safeguards. This reactor can produce only small amounts of plutonium, even if the plan to upgrade it to the 10- to 20-MWt

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level is carried out. Nevertheless, the many years of reactor operations at this facility have provided Egyptian scientists valuable engineering experience that will be useful in their expanding nuclear program. 25X1

The laboratories at Inchas have been involved in basic nuclear research and radioisotope production. The radiochemical laboratory, however, has equipment that could allow research on fuel reprocessing and radioactive waste disposal. The French have provided this laboratory with two hot cells and related equipment and have agreed to provide a third. The cells apparently are intended to allow the Egyptians to conduct research beyond basic nuclear research. The cells are 1.7 meters high and 3 square meters in area. They are designed to allow for safe handling of spent fuel samples with a radioactivity level of up to 10,000 curies. This probably would allow the handling of no more than a few kilograms of spent fuel containing a few grams of plutonium per batch operation. 25X1

Assuming the Egyptians had access to the spent fuel discharged from a standard power reactor (1,000-megawatt electric), they would be unable to extract significant amounts of plutonium. Nevertheless, the cells could provide the Egyptians valuable research and training with radioactive materials that would prove useful in the future should a weapons program be undertaken. 25X1

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Egypt has been interested in purchasing a power reactor for several years. Negotiations with the United States stalled in 1977 with the change of administrations and remained dormant until early 1981, when Egypt ratified the NPT. One delay in past discussions was the inability of the US Government under its current laws and regulations to provide financing.

Shortly after ratifying the NPT, Egypt announced an agreement to purchase two reactors—probably 1,000 megawatts each—from the French. In addition to the reactors, the French will provide three training courses associated with the safety system of the reactors. To finance this and future nuclear power plants, the Egyptians announced they will earmark US $500 million annually of their oil revenues, starting in 1982, to pay for the nuclear power plants although the current soft oil market could delay the startup of this financial scheme. 25X1

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Egypt also has discussed purchasing reactors from the United Kingdom, West Germany, India, Italy, and Sweden. It is not clear why Egypt is approaching so many suppliers, but it probably does not wish to become too dependent on one supplier. Also, Egypt may believe that by approaching several suppliers, it could stimulate competition and receive lower bids and better financing. The dissatisfaction with the United States in the 1970s over financing could have played a part in their seeking other suppliers. 25X1

Should construction of the French and possibly US reactors begin in the next few years, it would be possible for Egypt to have several reactors operational by the early-to-mid-1990s and be on its way to having eight reactors operational by the end of the century. 25X1

Nuclear Weapons Interest and Options

We do not believe that Egypt has a nuclear weapons program. Nevertheless, the Egyptians probably have been interested in nuclear weapons since the early 1960s when Nasir was President. The most recent attempts to initiate such a program began in 1975 when President Sadat established the Higher Council for the Use of Nuclear Power for All Purposes. We believe that nuclear weapons were among these purposes. 25X1

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Eygpt's limited nuclear facilities and its continued dependence on foreign technical assistance for the foreseeable future will restrict its near-term options for the development of nuclear weapons. The Qathara Depression Project [1] that could have provided at least a rationale for developing and testing a nuclear explosive apparently is dead. Also, the small Soviet reactor at Inchas cannot produce significant quantities of plutonium. Although Egypt has a cadre of trained nuclear scientists, years of experience in reactor operations, and some capability in reactor core

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[1] The project did not get beyond the study phase to use nuclear explosions to form a channel from the Mediterranean Sea to the Qathara Depression for the production of hydroelectric power

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design, the clandestine construction of a production reactor does not offer Egypt much of a near-term option for acquiring plutonium. The reactor would be difficult to construct and probably would be detected.[redacted] 25X1

[redacted] 25X1

Cairo's best option to develop a weapons capability in the foreseeable future is probably through access to plutonium by reprocessing the spent fuel once the reactors are operational. But Egypt would have to violate various agreements and the associated international safeguards to do so. Egypt at one time was interested in storing high-level waste from French reprocessing of Austrian power reactor fuel. There is no indication, however, that Egypt was interested in the plutonium that would be contained in this waste. (Ordinarily there would only be a very small amount of plutonium left in the waste in any case.)[redacted] 25X1

Uranium Supply

The Egyptian decision to expand its nuclear program to help satisfy its energy needs may have been motivated in part by the discovery of uranium deposits in the eastern desert. The deposits are believed to contain about 5,000 tons of recoverable uranium.[redacted] 25X1

Previous Egyptian uranium mining operations have not been economical. To carry out further exploration, the Nuclear Materials Authority temporarily chaired by Mostafak El Ayouty since September 1981 was established. With Canadian assistance, Egypt reportedly will begin producing uranium in 1982 from the new discoveries and will have a production capacity of 30 to 50 tons per year. The capacity is slated to reach a steady rate of 100 tons per year from 1984 to 1990, at which time cumulative production is expected to be about 700 tons. In addition, a review will be made at that time to decide whether production will be increased by doubling or tripling the annual rates. This production could not support the six to eight reactors envisioned by the year 2000; these would require about 900 to 1,200 tons per year.[redacted] 25X1

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Trained Personnel

A major potential strength of the Egyptian nuclear program is its impressive collection of as many as 400 trained nuclear scientists. According to a recent open-source publication, about 227 of them went on official leaves of absence to work in other Arab countries in 1979. Egypt probably will have difficulties in getting these scientists to return because other Arab countries pay wages that are superior to those in Egypt. For example, an Egyptian nuclear engineer with a doctorate degree and five years of work experience reportedly earns less than US $2,500 annually in Egypt, which is probably much less than engineers with similar experience earn in other Arabic countries.

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Egypt reportedly has asked its scientists to return. Egypt is emphasizing its need for nuclear power and that its scientists are needed for an Egyptian nuclear program. Also, Egypt may not want its scientists to contribute to nuclear programs in Iraq and Libya. The government is trying to work out a scheme for financial compensation for returning scientists and engineers.

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